

REMARKS

The Office Action dated June 12, 2009 lists the following rejections: claims 1-5 and 29-31 stand rejected under 35 U.S.C. § 103(a) over Warwick (U.S. Patent Pub. 2001/0023957); and claims 1-5 and 22-31 stand rejected under 35 U.S. C. § § 112(1) and 112(2). Applicant traverses all of the rejections and, unless explicitly stated by the Applicant, does not acquiesce to any objection, rejection or averment made in the Office Action.

The § 103(a) rejections cannot stand because the Office Action has not cited correspondence to various limitations, and instead relies upon unsupported assertions of what “is conventional and well known” or what “would have been obvious” as relative to modifying the ‘957 reference, contrary to the M.P.E.P. and relevant case law.¹² Regarding the dependent claims, the Office Action has failed to address various limitations at all. The § 103 rejections are also improper because they rely upon an erroneous assertion that a MOS device can somehow selectively operate as a MOS device or as a bipolar transistor, despite the lack of any corresponding disclosure. The § 112 rejections are improper because they appear to be based upon a requirement that the specification recite word-for-word correspondence, which is contrary to § 112 and the M.P.E.P., and further ignore various supporting examples in the specification. The following addresses these matters in greater detail, in view of which Applicant believes that all claims are in condition for allowance.

Beginning with the § 103 rejections, the ‘957 reference fails to disclose multiple limitations including, for example, a hybrid device having both a MOS device and a bipolar device as in claim 1 (and relevant independent claim 22), or that such a device would operate in accordance with a bipolar transistor via application of a bias as claimed. The Office Action’s attempt to show correspondence to these two (hybrid) devices fails to cite any bipolar device, and instead asserts that the alleged MOS device (source 13A, gate 21, drain 14 and body 15A) is somehow both a MOS device and a bipolar device as claimed yet fails to explain how the disclosed MOS device could operate as such. Specifically, the Office Action’s assertion that “a MOS transistor has a parasitic bipolar transistor” fails to cite or otherwise provide any explanation as to how the cited MOS device could or would be biased

¹See, e.g., M.P.E.P. § § 2141 and 2143

² *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007)

to operate as a bipolar device, or as to how the cited MOS device would operate under conditions of bias (or under any condition) that would result in bipolar behavior.

As another example, the '957 reference fails to disclose limitations directed to a gate and body that are shorted to one another and that are positively biased relative to a drain (*see, e.g.,* claim 1). This is consistent with the Examiner's indications in the record, which state that these limitations are not present in the '957 reference. Instead of citing correspondence, the Office Action offers an unsupported opinion that "shorting a gate and a body region is conventional and well known." Such an opinion is insufficient to establish (and maintain) a rejection under § 103.

The rejections of multiple dependent claims fail for similar reasons, in that the Office Action has similarly relied upon assertions regarding alleged "routine experimentation" or what "would have been obvious," without proving any evidence supporting these opinions. In addition, the Office Action has not directly addressed the limitations in dependent claims 29-31 and 23-27. As such, all § 103 rejections fail.

The § 103 rejections are also improper because the Office Action has failed to cite evidence of motivation for modifying the '957 reference, to include limitations that are not otherwise present in the reference, such as those limitations directed to a shorted gate and body as discussed above. In many instances, the Office Action simply asserts that certain limitations are "well known" (see the rejection of claim 5), without citing any evidence of such "well known" features and without even attempting to provide any motivation for modifying the '957 reference to include such features. As indicated in the above-cited *KSR* decision, prior-art evidence of motivation is required when the operation of a reference is modified in order to arrive at the claimed invention. The *Kubin*³ court affirmed the *KSR* court's reiteration that a simple "articulated reasoning" (or opinion, as in this case) is insufficient where the proposed combination modifies the operation of a primary reference. In this instance, shorting the body and gate together in the '957 reference would clearly modify the operation of the reference, from that of an insulated gate device to that of a "breakdown diode" as asserted in the Office Action. As consistent with well-understood insulated gate

³ *In re Kubin*, Fed. Cir. April 3, 2009

services, the '957 reference explicitly requires that its trench gate is an insulated gate ("an insulating layer is provided in the trenches between the gate material in the trenches and the semiconductor body"), and the reference's stated purpose is to reduce "insulating layer breakdown voltage" (see paragraphs 0002 and 0005). As nothing in the record or in the '957 reference would evidence motivation for or otherwise support replacing the '957 reference's trench gate device with a breakdown diode, the § 103 rejection cannot stand.

The § 103 rejections are also improper because the proposed modification of the '957 reference would render the reference inoperable for its purpose as directed to a transistor having a gate insulating layer with a reduced breakdown voltage. When the prior art teaches away from a proposed combination and/or renders a reference unsatisfactory for its intended purpose, the law is clear that there is no motivation to support an obviousness rejection. *See, e.g.,* M.P.E.P. §§ 2143.01 (citing *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984)); and *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (U.S. 2007). In this instance, the Office Action has provided no explanation as to how the trench gate device of the '957 reference could function with its gate and body region shorted together. As relevant to the above discussion regarding the lack of correspondence, modifying the '957 reference as suggested in the Office Action would short the reference's gate to its body region, thus rendering the reference inoperable for its purpose as directed to insulating a gate from a body region, and further directed to reducing insulating layer breakdown voltage. Accordingly, there is no motivation to modify the '957 reference as asserted and the § 103 rejections should be removed.

The § 112(1) rejections are improper because they are based upon an improper standard in impermissibly requiring word-for-word correspondence in the specification, and in further basing the rejection upon what is shown in the Figures, while failing to address the various examples provided in the specification. The rejections are further improper because the specification provides clear support for the limitations upon which the rejections are based (emitter, base and collector). Referring to the published version of the instant application, paragraphs 0010-0011 describe an exemplary embodiment involving an emitter region 102, base region 110 and a collector 105 with reference to Figure 1. The § 112(1) rejections are therefore without basis and should be removed.

The § 112(2) rejections rely upon the same erroneous rationale as the § 112(1) rejections rely upon, and are similarly improper for reasons as discussed above. One of skill in the art would not only recognize the claimed subject matter, the specification provides exemplary support as described, for example, in paragraphs 0010-0011 as cited above. Accordingly, the § 112(2) rejections are also improper and should be removed.

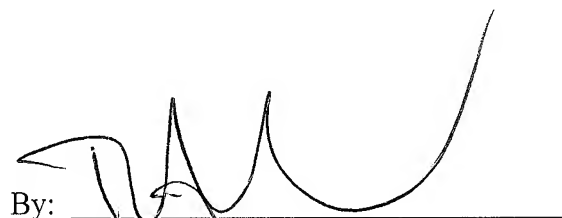
Applicant has added new claims 32-35, which are believed to be allowable over the cited reference for reasons including those stated above. Applicant further believes claims 32 and 33 are allowable over the cited reference because the reference fails to teach or suggest limitations directed to an electrode that shorts a gate to a body and that is configured and arranged to apply a bias to forward bias the gate and electrode and cause the source to operate as an emitter and the body to operate as a base in bipolar operation. The cited reference also fails to teach or suggest such an electrode that forms a MOS channel along a sidewall of a trench in which a trench gate is formed, to pass current from a source/emitter to a base/body. Support for these limitations may be found throughout the specification, with exemplary embodiments at paragraphs 0010-0011 and shown in Figure 1.

In view of the above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063 (or the undersigned).

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